

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 3



GUADALUPE COUNTY, TEXAS AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
CIBOLO, CITY OF	480267
GUADALUPE COUNTY, UNINCORPORATED AREAS	480266
LULING, CITY OF	480096
MARION, CITY OF	480268
NEW BERLIN, CITY OF	481625
NEW BRAUNFELS, CITY OF	485493
SANTA CLARA, CITY OF	480013
SCHERTZ, CITY OF	480269
SEGUIN, CITY OF	485508
SELMA, CITY OF	480046
STAPLES, CITY OF	481529



FEMA

PRELIMINARY
4/7/2017

REVISED:

FLOOD INSURANCE STUDY NUMBER
48187CV002B

Version Number 2.3.3.3

TABLE OF CONTENTS

Volume 1

	<u>Page</u>
SECTION 1.0 – INTRODUCTION	1
1.1 The National Flood Insurance Program	1
1.2 Purpose of this Flood Insurance Study Report	2
1.3 Jurisdictions Included in the Flood Insurance Study Project	2
1.4 Considerations for using this Flood Insurance Study Report	5
 SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS	 15
2.1 Floodplain Boundaries	15
2.2 Floodways	23
2.3 Base Flood Elevations	24
2.4 Non-Encroachment Zones	24
2.5 Coastal Flood Hazard Areas	24
2.5.1 Water Elevations and the Effects of Waves	24
2.5.2 Floodplain Boundaries and BFEs for Coastal Areas	25
2.5.3 Coastal High Hazard Areas	25
2.5.4 Limit of Moderate Wave Action	25
 SECTION 3.0 – INSURANCE APPLICATIONS	 25
3.1 National Flood Insurance Program Insurance Zones	25
3.2 Coastal Barrier Resources System	26
 SECTION 4.0 – AREA STUDIED	 26
4.1 Basin Description	26
4.2 Principal Flood Problems	27
4.3 Non-Levee Flood Protection Measures	28
4.4 Levees	29
 SECTION 5.0 – ENGINEERING METHODS	 33
5.1 Hydrologic Analyses	33
5.2 Hydraulic Analyses	45
5.3 Coastal Analyses	55
5.3.1 Total Stillwater Elevations	55
5.3.2 Waves	55
5.3.3 Coastal Erosion	55
5.3.4 Wave Hazard Analyses	55
5.4 Alluvial Fan Analyses	56
 SECTION 6.0 – MAPPING METHODS	 56
6.1 Vertical and Horizontal Control	56
6.2 Base Map	57
6.3 Floodplain and Floodway Delineation	58

Volume 1, Continued

Figures

	<u>Page</u>
Figure 1: FIRM Index	7
Figure 2: FIRM Notes to Users	8
Figure 3: Map Legend for FIRM	11
Figure 4: Floodway Schematic	23
Figure 5: Wave Runup Transect Schematic	24
Figure 6: Coastal Transect Schematic	25
Figure 7: Frequency Discharge-Drainage Area Curves	44
Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas	55
Figure 9: Transect Location Map	56

Tables

	<u>Page</u>
Table 1: Listing of NFIP Jurisdictions	2
Table 2: Flooding Sources Included in this FIS Report	17
Table 3: Flood Zone Designations by Community	26
Table 4: Coastal Barrier Resources System Information	26
Table 5: Basin Characteristics	27
Table 6: Principal Flood Problems	28
Table 7: Historic Flooding Elevations	28
Table 8: Non-Levee Flood Protection Measures	28
Table 9: Levees	33
Table 10: Summary of Discharges	33
Table 11: Summary of Non-Coastal Stillwater Elevations	45
Table 12: Stream Gage Information used to Determine Discharges	45
Table 13: Summary of Hydrologic and Hydraulic Analyses	47
Table 14: Roughness Coefficients	54
Table 15: Summary of Coastal Analyses	55
Table 16: Tide Gage Analysis Specifics	55
Table 17: Coastal Transect Parameters	56
Table 18: Summary of Alluvial Fan Analyses	56
Table 19: Results of Alluvial Fan Analyses	56
Table 20: Countywide Vertical Datum Conversion	57
Table 21: Stream-Based Vertical Datum Conversion	57
Table 22: Base Map Sources	58
Table 23: Summary of Topographic Elevation Data used in Mapping	58
Table 24: Floodway Data	60

Volume 2

	<u>Page</u>
SECTION 6.0 – MAPPING METHODS	
6.4 Coastal Flood Hazard Mapping	93
6.5 FIRM Revisions	93
6.5.1 Letters of Map Amendment	93

Volume 2, Continued

SECTION 6.0 – MAPPING METHODS, Continued

6.5	FIRM Revisions, Continued	
6.5.2	Letters of Map Revision Based on Fill	93
6.5.3	Letters of Map Revision	94
6.5.4	Physical Map Revisions	94
6.5.5	Contracted Restudies	95
6.5.6	Community Map History	95

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION 97

7.1	Contracted Studies	97
7.2	Community Meetings	102

SECTION 8.0 – ADDITIONAL INFORMATION 106

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES 108

Tables

	<u>Page</u>
Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams	93
Table 26: Summary of Coastal Transect Mapping Considerations	93
Table 27: Incorporated Letters of Map Change	94
Table 28: Community Map History	96
Table 29: Summary of Contracted Studies Included in this FIS Report	98
Table 30: Community Meetings	103
Table 31: Map Repositories	106
Table 32: Additional Information	107
Table 33: Bibliography and References	109

Exhibits

Flood Profiles	<u>Panel</u>
INTENTIONALLY LEFT OUT	01 P
Alligator Creek	02-05 P
Cibolo Creek	06-22 P
Cibolo-Dietz Creek Diversion	23-24 P
Cibolo Creek Landfill Diversion	25 P
Cibolo Creek Tributary No. 13	26 P
Cottonwood Creek North	27-30 P
Cottonwood Creek South	31-39 P
Dietz Creek	40-44 P
East Branch Dietz Creek	45-48 P
Elm Creek North	49-50 P
Elm Creek South	51-54 P
Geronimo Creek	55-60 P

Volume 3

Exhibits

Flood Profiles	<u>Panel</u>
Guadalupe River	62-77 P
Interstate Highway-10 Diversion	78 P
Long Creek	79-81 P
San Marcos River	82-90 P
Santa Clara Creek	91-97 P
Santa Clara Creek Tributary No. 1	98-99 P
Santa Clara Creek Tributary No. 2	100 P
Town Creek	101-105 P
Town Creek Tributary No. 1	106 P
Walnut Branch	107-108 P
York Creek	109-117 P

Published Separately

Flood Insurance Rate Map (FIRM)

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 26: Summary of Coastal Transect Mapping Considerations

[Not Applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, “Map Repositories”).

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit www.fema.gov/floodplain-management/letter-map-amendment-loma and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/floodplain-management/letter-map-amendment-loma for the “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill” or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the “Flood Map-Related Fees” section.

A tutorial for LOMR-F is available at www.fema.gov/online-tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions and download the form “MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision”. Visit the “Flood Map-Related Fees” section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Guadalupe County FIRM are listed in Table 27.

Table 27: Incorporated Letters of Map Change

[Not Applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is an official republication of a community’s NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community’s chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the “Flood Map Revision Processes” section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Guadalupe County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, “Community Map History.” A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.
- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or “pending” (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first FHBM. This date may be the same date as the Initial NFIP Map Date.
- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM

dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as PMRs of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Guadalupe County FIRMs in countywide format was 11/02/2007.

Table 28: Community Map History

Community Name	Initial Identification Date	Initial FHB M Effective Date	FHB M Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Cibolo, City of	02/01/1974	02/01/1974	04/02/1976	05/19/1981	11/02/2007 06/02/1995
Guadalupe County, Unincorporated Areas	01/24/1975	01/24/1975	11/08/1977	03/01/1979	TBD 11/02/2007 11/20/1998 08/16/1995 01/03/1985 11/25/1980
Luling, City of ¹	05/24/1974	05/24/1974	11/08/1977	03/01/1979	TBD 06/19/2012 ³ 11/02/2007 12/08/1998 ³ 11/20/1998 08/16/1995 01/03/1985 11/25/1980
Marion, City of	01/09/1974	01/09/1974	04/23/1976	01/03/1986	11/02/2007
New Berlin, City of	01/24/1975 ¹	01/24/1975 ¹	11/08/1977 ¹ 01/31/1978 ²	03/01/1979	09/29/2010 ² 11/02/2007 02/16/1996 ² 08/16/1995 07/17/1989 ² 10/16/1984 ²
New Braunfels, City of	12/02/1972	12/02/1972	05/07/1976 09/12/1975	12/02/1972	09/02/2009 ⁴ 11/02/2007 01/05/2006 05/15/1991 06/17/1986

Table 28: Community Map History, (continued)

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Santa Clara, City of ¹	01/24/1975	01/24/1975	11/08/1977	03/01/1979	11/02/2007 11/20/1998 08/16/1995 01/03/1985 11/25/1980
Schertz, City of	03/01/1974	03/01/1974	08/06/1976	09/15/1977	09/29/2010 ² 09/02/2009 ⁴ 11/02/2007 07/17/1995 09/30/1992
Seguin, City of	06/18/1971	06/18/1971		06/18/1971	11/02/2007 03/07/2000 12/30/1980
Selma, City of	12/06/1974	12/06/1974		07/02/1980	11/02/2007 02/16/1996 ²
Staples, City of ¹	01/24/1975	01/24/1975	11/08/1977	03/01/1979	TBD 11/02/2007 11/20/1998 08/16/1995 01/03/1985 11/25/1980

¹Dates for this community were taken from Guadalupe County, Unincorporated Areas

²Dates were taken from the Bexar County Flood Insurance Study

³Dates were taken from the Caldwell County Flood Insurance Study

⁴Dates were taken from the Comal County Flood Insurance Study

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Alligator Creek	06/17/1986	K. M. Ng & Associates, Inc.	N/A	August 1983	New Braunfels, City of
Alligator Creek	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas; New Braunfels, City of
Cibolo Creek	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of; Guadalupe County, Unincorporated Areas; Schertz, City of; Selma, City of
Cibolo Creek	06/02/1995	Dewberry & Davis and USACE	EMW90-E-3263	January 1993	Guadalupe County, Unincorporated Areas; New Berlin, City of;
Cibolo-Dietz Creek Diversion	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Schertz, City of
Cibolo Creek Landfill Diversion	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Schertz, City of
Cibolo Creek Tributary No.13	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of
Cottonwood Creek North	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas
Cottonwood Creek South	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas
Dietz Creek	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Selma, City of; Schertz, City of
East Branch Dietz Creek	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of; Schertz, City of
Elm Creek North	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas
Elm Creek South	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report, (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Geronimo Creek	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas; New Braunfels, City of; Seguin, City of
Guadalupe River	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Guadalupe County, Unincorporated Areas; New Braunfels, City of; Seguin, City of
Guadalupe River	01/05/2006	CH2MHILL for the City of New Braunfels	N/A	08/22/2003	New Braunfels, City of
Guadalupe River	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas
Interstate Highway-10 Diversion	06/02/1995	Dewberry & Davis	EMW-90-E-3263	January 1993	Guadalupe County, Unincorporated Areas
Long Creek	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas
San Marcos River	TBD	Compass PTS JV	HSFE06-15-J-0002	8/31/2016	Guadalupe County, Unincorporated Areas; Luling, City of; Staples, City of
Santa Clara Creek	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas; Santa Clara, City of
Santa Clara Creek Tributary No.1	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas; Santa Clara, City of
Santa Clara Creek Tributary No.2	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas; Marion, City of; Santa Clara, City of
Town Creek	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of; Guadalupe County, Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report, (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Town Creek	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of; Guadalupe County, Unincorporated Areas
Town Creek Tributary No.1	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of
Town Creek Tributary No.1	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of; Guadalupe County, Unincorporated Areas
Town Creek Tributary No.2	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of; Guadalupe County, Unincorporated Areas; Santa Clara, City of
Town Creek Tributary No.4	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Cibolo, City of; Guadalupe County, Unincorporated Areas
Walnut Branch	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Guadalupe County Unincorporated Areas; Seguin, City of
York Creek	N/A	NRCS	IAA-H-4-73	03/01/1979	Guadalupe County, Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report, (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Zone A Streams (Alligator Creek, Bear Hollow Creek, Blue Creek, Brushy Creek, Buzzard Creek, Campbell Branch, Cantau Creek, Cardell Creek, Cibolo Tributary No. 16, Cottonwood Creek North, Darst Creek, Deadman Creek, Deer Creek, Dukes Hollow Creek, Ecletto Creek, Elm Creek South, Fourmile Creek, Highsmith Creek, Konde Branch, Krams Creek, Little Creek, Long Branch, Long Creek (Tributary of the Guadalupe River), Mill Creek, Nash Creek, O'Neil Creek, Red Branch, Rudolph Creek, Sandies Creek, Salt Creek, Santa Clara Creek, Saul Creek, Sawlog Creek, Smith Creek, Tidwell Creek, Town Creek, Wolf Creek, and Youngs Creek)	11/02/2007	Halff Associates, Inc.	EMT-2002-CO-0051	September 2005	Guadalupe County, Unincorporated Areas; New Berlin, City of; New Braunfels, City of; Santa Clara, City of; Schertz, City of; Seguin, City of; Selma, City of

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Cibolo, City of	11/02/2007	07/31/2003	Initial CCO	Michael Baker Jr., Inc. (RMC); Schertz, City of; Cibolo, City of; Seguin, City of; Selma, City of; Marion, City of; Guadalupe County; Texas Water Development Board (TWDB); Guadalupe Blanco River Authority (GBRA); Halff Associates, Inc.
		01/27/2006	Final CCO	FEMA, Guadalupe County, various incorporated communities and the study contractor
Guadalupe County, Unincorporated Areas	TBD	10/19/2016	Flood Risk Review	Hays County, Caldwell, Guadalupe County, Cities of Martindale, Woodcreek, San Marcos, Luling, Wimberley, FEMA, TWDB, Compass JV
Luling, City of	TBD	09/21/2016	Hydrology Meeting	Hays County, Caldwell County, Cities of Luling, San Marcos, and Wimberley, Compass JV, FEMA, GBRA, TWDB, USGS, and USACE
		10/19/2016	Flood Risk Review	Hays County, Caldwell, Guadalupe County, Cities of Martindale, Woodcreek, San Marcos, Luling, Wimberley, FEMA, TWDB, Compass JV
Marion, City of	11/02/2007	07/31/2003	Initial CCO	Michael Baker Jr., Inc. (RMC); Schertz, City of; Cibolo, City of; Seguin, City of; Selma, City of; Marion, City of; Guadalupe County; Texas Water Development Board (TWDB); Guadalupe Blanco River Authority (GBRA); Halff Associates, Inc.
		01/27/2006	Final CCO	FEMA, Guadalupe County, various incorporated communities and the study contractor

Table 30: Community Meetings, (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
New Berlin, City of ¹	11/02/2007	07/31/2003	Initial CCO	Michael Baker Jr., Inc. (RMC); Schertz, City of; Cibolo, City of; Seguin, City of; Selma, City of; Marion, City of; Guadalupe County; Texas Water Development Board (TWDB); Guadalupe Blanco River Authority (GBRA); Halff Associates, Inc.
		01/27/2006	Final CCO	FEMA, Guadalupe County, various incorporated communities and the study contractor
New Braunfels, City of	11/02/2007	07/31/2003	Initial CCO	Michael Baker Jr., Inc. (RMC); Schertz, City of; Cibolo, City of; Seguin, City of; Selma, City of; Marion, City of; Guadalupe County; Texas Water Development Board (TWDB); Guadalupe Blanco River Authority (GBRA); Halff Associates, Inc.
		01/27/2006	Final CCO	FEMA, Guadalupe County, various incorporated communities and the study contractor
Santa Clara, City of	11/02/2007	07/31/2003	Initial CCO	Michael Baker Jr., Inc. (RMC); Schertz, City of; Cibolo, City of; Seguin, City of; Selma, City of; Marion, City of; Guadalupe County; Texas Water Development Board (TWDB); Guadalupe Blanco River Authority (GBRA); Halff Associates, Inc.
		01/27/2006	Final CCO	FEMA, Guadalupe County, various incorporated communities and the study contractor
Schertz, City of	11/02/2007	07/31/2003	Initial CCO	Michael Baker Jr., Inc. (RMC); Schertz, City of; Cibolo, City of; Seguin, City of; Selma, City of; Marion, City of; Guadalupe County; Texas Water Development Board (TWDB); Guadalupe Blanco River Authority (GBRA); Halff Associates, Inc.
		01/27/2006	Final CCO	FEMA, Guadalupe County, various incorporated communities and the study contractor

Table 30: Community Meetings, (continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Seguin, City of	11/02/2007	07/31/2003	Initial CCO	Michael Baker Jr., Inc. (RMC); Schertz, City of; Cibolo, City of; Seguin, City of; Selma, City of; Marion, City of; Guadalupe County; Texas Water Development Board (TWDB); Guadalupe Blanco River Authority (GBRA); Halff Associates, Inc.
		01/27/2006	Final CCO	FEMA, Guadalupe County, various incorporated communities and the study contractor
Staples, City of				
Selma, City of	11/02/2007	07/31/2003	Initial CCO	Michael Baker Jr., Inc. (RMC); Schertz, City of; Cibolo, City of; Seguin, City of; Selma, City of; Marion, City of; Guadalupe County; Texas Water Development Board (TWDB); Guadalupe Blanco River Authority (GBRA); Halff Associates, Inc.
		01/27/2006	Final CCO	FEMA, Guadalupe County, various incorporated communities and the study contractor

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

Table 31 is a list of the locations where FIRMs for Guadalupe County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Cibolo, City of	City Hall 200 South Main Street	Cibolo	TX	78108
Guadalupe County, Unincorporated Areas	Environmental Health Department 2605 North Guadalupe Street	Seguin	TX	78155
Luling, City of	Mapping Department 509 East Crockett Street	Luling	TX	78648
Marion, City of	Public Works Director 303 South Center Street	Marion	TX	78124
New Berlin, City of	City Hall 275 FM 2538	New Berlin	TX	78155
New Braunfels, City of	Engineering Division/Public Works 550 Landa Street	New Braunfels	TX	78130
Santa Clara, City of	City Hall 1535 North Santa Clara Road	Marion	TX	78124
Schertz, City of	Department of Engineering 10 Commercial Place Building 2	Schertz	TX	78154
Seguin, City of	Planning Department 205 North River Street	Seguin	TX	78155
Selma, City of	City Hall 9375 Corporate Drive	Selma	TX	78154
Staples, City of	Civic Center 9615 FM 621	Staples	TX	78670

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region VI	Jennifer Knecht FEMA Region Representative FEMA Region VI 800 North Loop 288 Denton, TX 76209 (940) 898-5553 Jennifer.Knecht@fema.dhs.gov
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Michael Segner, CFM Texas Water Development Board 1700 North Congress Avenue P.O. Box 13231 Austin, TX 78711-3231 (512) 463-3509 x111 michael.segner@twdb.texas.gov

State GIS Coordinator	Mike Ouimet State GIS Coordinator 300 West 15th Street P.O. Box 13564 Austin, TX 78711-3564 (512) 305-9076 Fax: (512) 475-4759 mike.ouimet@dir.state.tx.us
-----------------------	---

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
CH2M Hill	CH2M Hill	Milestone II Report: City of New Braunfels FIS Update		New Braunfels, TX	May, 2003	
Colwick, 1972		Severe Floods at New Braunfels, TX	Colwick, Allen B, McGill, H.N., Erichsen, F.P.		May 1972, Revised June 1973	
FEMA, 1981	Federal Emergency Management Agency	Flood Insurance Study, Caldwell County, Texas (Unincorporated Areas)		Washington, D.C.	09/15/1981	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1986	Federal Emergency Management Agency	Flood Insurance Study, City of New Braunfels, Comal and Guadalupe Counties, Texas		Washington, D.C.	06/17/1986	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1991	Federal Emergency Management Agency	Flood Insurance Study, City of New Braunfels, Comal and Guadalupe Counties, Texas		Washington, D.C.	05/15/1991	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1992	Federal Emergency Management Agency	Flood Insurance Study, City of Schertz, Bexar, Comal and Guadalupe Counties, Texas		Washington, D.C.	09/30/1992	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1995	Federal Emergency Management Agency	Flood Insurance Study, City of Cibola, Guadalupe County, Texas		Washington, D.C.	06/02/1995	FEMA Flood Map Service Center msc.fema.gov

Table 33: Bibliography and References, (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA, 1998	Federal Emergency Management Agency	Flood Insurance Study, Guadalupe County, Texas (Unincorporated Areas)		Washington, D.C.	11/20/1998	FEMA Flood Map Service Center msc.fema.gov
FEMA, 2000	Federal Emergency Management Agency	Flood Insurance Study, City of Seguin, Guadalupe County, Texas		Washington, D.C.	03/07/2000	FEMA Flood Map Service Center msc.fema.gov
FEMA, 2002-A	Federal Emergency Management Agency	Flood Insurance Study, Bexar County, Texas and Incorporated Areas		Washington, D.C.	01/04/2002	FEMA Flood Map Service Center msc.fema.gov
FEMA, 2002-B	Federal Emergency Management Agency	Finding of no Significant Impact for West Dietz Creek Drainage Improvement Project in the City of Schertz, Texas (FEMA-1257-DR-TX).			09/13/2002	
FEMA, 2005	Federal Emergency Management Agency	Preliminary Flood Insurance Study, City of New Braunfels, Comal and Guadalupe Counties, Texas		Washington, D.C.	2005	FEMA Flood Map Service Center msc.fema.gov
GBRA, 1941	Guadalupe-Brazos River Authority	San Marcos River and Guadalupe River Water-Surface Profiles			1941	
Landata, 2001	Landata	Topographic Maps			2001	
McGraw-Hill, 1959	McGraw-Hill Book Company	Open Channel Hydraulics	Chow, Ven Te	New York, NY	1959	

Table 33: Bibliography and References, (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
NB, 2000	City of New Braunfels, Texas	Drainage and Erosion Control Manual			September 2000	
NOAA, 1961	USDOC, Weather Bureau, NOAA	Rainfall Frequency Atlas of the United States, Technical Paper No. 40		Washington, D.C.	May 1961	
NRCS, 1986	Natural Resources Conservation Service	Technical Release TR-55, Urban Hydrology for Small Watersheds			June 1986	
SCS, 1972	Soil Conservation Service	Special Storm Report, Storm of May 11-12, 1972		New Braunfels, TX		
SCS, 1976	U.S. Department of Agriculture, Soil Conservaton Service	WSP-2 Computer Program, Technical Release No. 61		Washington, D.C.	May 1976	
SCS, 1982	U.S. Department of Agriculture, Soil Conservaton Service	TR-20 Computer Program for Project Formulation – Hydrology		Washington, D.C.	May 1982	
Spectrum, 2004	Spectrum Mapping, LLC	Guadalupe, Texas, Final Report		Denver, CO	May 2004	
TNRIS	Texas Natural Resources Information System	USGS 30-meter National Elevation Dataset, DEM		Austin, TX		http://www.tnris.org/DigitalData/DEMs/dems.htm
Tobin, 1982	Tobin Research, Inc.	Topographic Maps compiled from Aerial Photographs		Comal County, TX	January 1982	
Tobin, 2003	Tobin International Ltd.	0.5 foot resolution B&W Ortho-Imagery, Mr. SID format			2003	

Table 33: Bibliography and References, (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
TWDB, 1963	Texas Water Development Board	Floods in Texas, Magnitude and Frequency of Peak Flows		Austin, TX	December 1963	
USACE, 1975	U.S. Army Corps of Engineers, Fort Worth District	Special Flood Hazard Report, Walnut Branch, Seguin, Texas		Fort Worth, TX	December 1975	
USACE, 1976	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-2 Water Surface Profiles, Generalized Computer Program		Davis, CA	November 1976	
USACE, 1984	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-2 Water Surface Profiles, Generalized Computer Program		Davis, CA	April 1984	
USACE, 1991-A	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-1 Flood Hydrograph Package, Generalized Computer Program		Davis, CA	May 1991	
USACE, 1991-B	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-2 Water-Surface Profiles, Generalized Computer Program		Davis, CA	September 1991	
USACE, 1992	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-FFA Flood Frequency Analysis Computer Program, Version 3.1		Davis, CA	May 1992	

Table 33: Bibliography and References, (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE, 2001	U.S. Army Corps of Engineers, Hydrologic Engineering Center	Hydrologic Engineering Center, HEC-RAS River Analysis System, Version 3.0.1		Davis, CA	March 2001	
USACE, 2003-A	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-HMS Version 2.2.2		Davis, CA	May 2003	
USACE, 2003-B	U.S. Army Corps of Engineers	Walnut Branch Section 206 Ecosystem Restoration Project, Seguin, Guadalupe County, Texas		Fort Worth, TX	June 2003	
USACE, 2004	U.S. Army Corps of Engineers, Hydrologic Engineering Center	HEC-RAS Analysis System, Version 3.1.2		Davis, CA	April 2004	
USCB, 2000	US Census Bureau	Census 2000 Data for the State of Texas		Texas State Library and Archives Commission	05/28/2003	http://www.tsl.state.tx.us/ref/abouttx/popcity12000.html
USDA, 1957	U.S. Department of Agriculture	Watershed Work Plan for Watershed Protection and Flood Prevention. York Creek Watershed		Temple, TX	April 1957	
USDA, 1985	U.S. Department of Agriculture	National Engineering Handbook: Section 4, Hydrology		Washington, D.C.	1985	

Table 33: Bibliography and References, (continued)

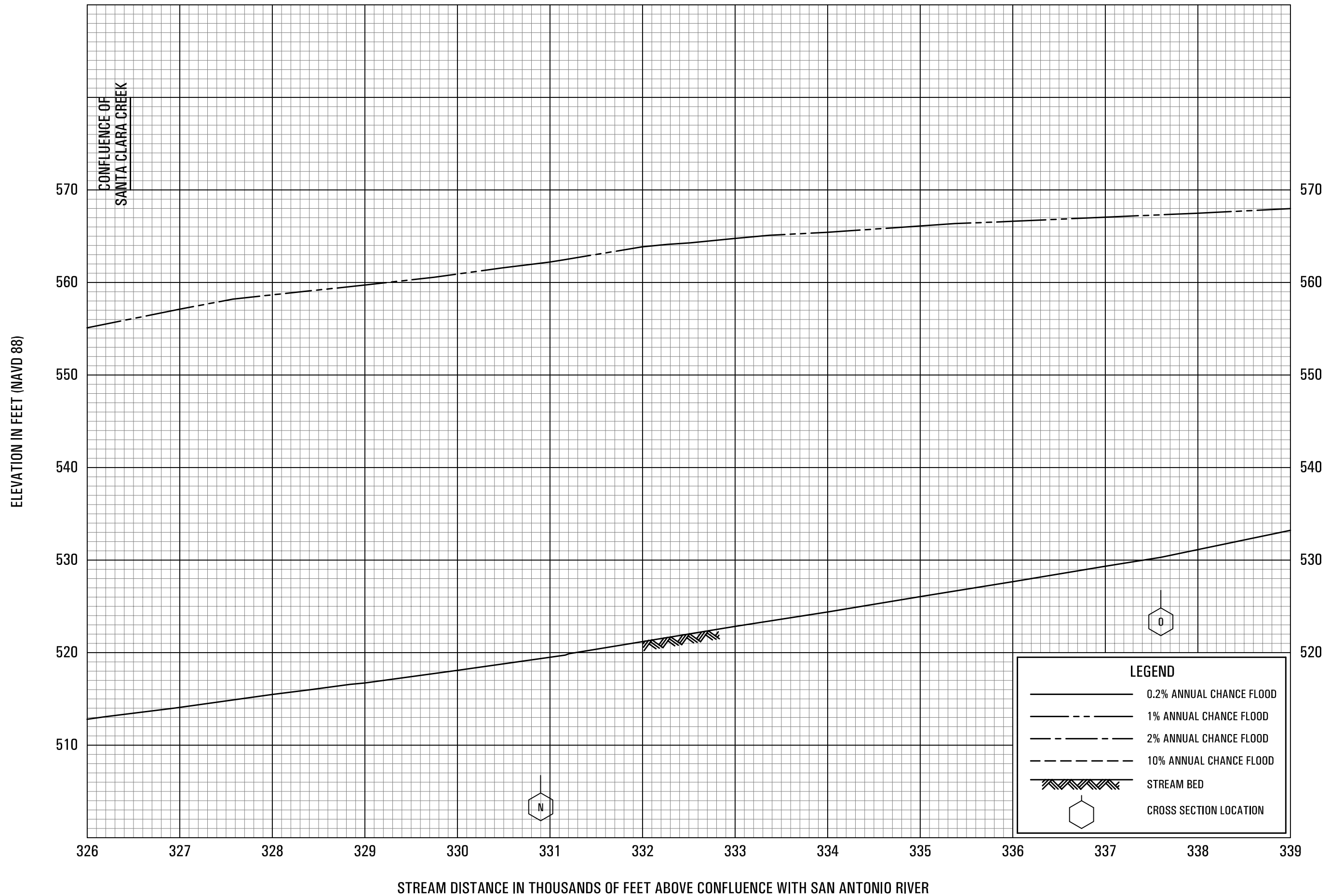
Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USDA, 2002	U.S. Department of Agriculture	Soil Survey Geographic (SSURGO) database for Guadalupe County, Texas		Fort Worth, TX	August 2002	
USDA, DB	U.S. Department of Agriculture	STATSGO database				
USDOT, 1973	U.S. Department of Transportation, Federal Highway Administration	Hydraulics of Bridge Waterways, Second Edition		Washington, D.C.	September 1973	
USGS 1998	US Department of the Interior, Geologic Survey	Floods in the San Antonio and Guadalupe River Basins in Texas	R.M. Slade, Kristie Persky	Reston, VA	October, 1998	
USGS, 1965	US Department of the Interior, Geologic Survey	Surface Water Supply of the United States. Part 8. Western Gulf of Mexico Basins		Washington, D.C.	1965	
USGS, 1970	US Department of the Interior, Geologic Survey	Surface Water Supply of the United States. Part 8. Western Gulf of Mexico Basins. 1961-1965		Washington, D.C.	1970	
USGS, 1973	US Department of the Interior, Geologic Survey	Water Resources for Texas, 1971-1973		Washington, D.C.	1972-1974	
USGS, 1974	US Department of the Interior, Geologic Survey	Surface Water Supply of the United States. Part 8. Western Gulf of Mexico Basins. 1966-1970		Washington, D.C.	1974	

Table 33: Bibliography and References, (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USGS, 1977	US Department of the Interior, Geologic Survey	Techniques for Estimating the Magnitude and Frequency of Floods in Texas		Washington, D.C.	1977	
USGS, 1981	US Department of the Interior, Geologic Survey, Office of Water Data Collection, Interagency Advisory Committee in Water Data	Guidelines for Determining Flood Flow Frequency, Bulletin 17B		Reston, VA	September 1981	
USGS, 1999	US Department of the Interior, Geologic Survey	Floods in the Guadalupe and San Antonio River Basins in Texas			October 1998 Revised September 1999	
USGS-A	US Department of the Interior, Geologic Survey	Major and Catastrophic Storms and Floods in Texas, U.S. Geological Survey Open-File Report 03-193, John Patton Narratives				http://floodsafety.com/texas/USGSdemo/patton.htm
USGS, Topo-A	US Department of the Interior, Geologic Survey	7.5-Minute Series Topographic Maps		Washington, D.C.	1957, 1958, 1961, 1962, 1964, 1967, 1973	
USGS, Topo-A	US Department of the Interior, Geologic Survey	7.5-Minute Series Topographic Maps		Washington, D.C.	1964, 1973, 1981, 1994	

Table 33: Bibliography and References, (continued)

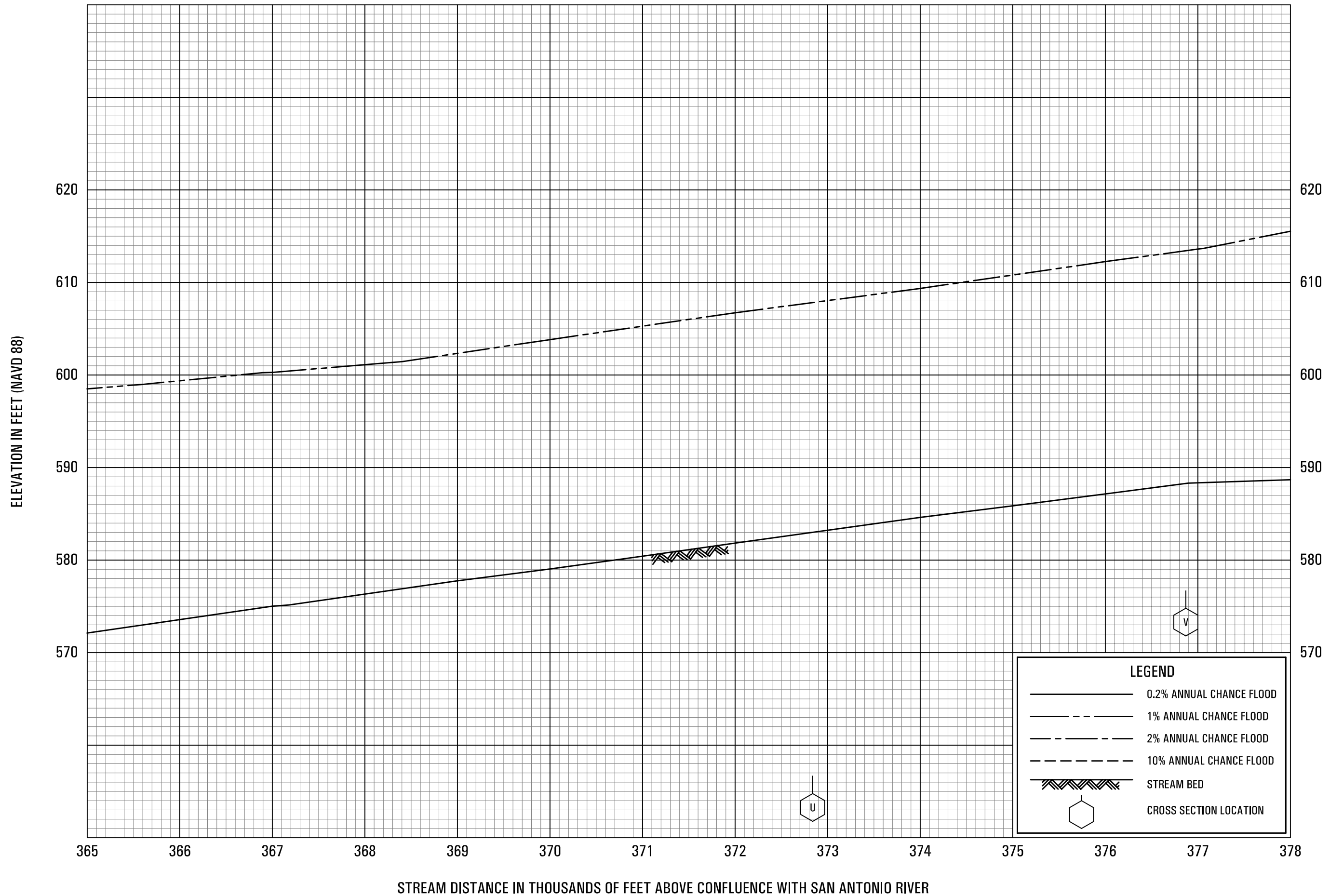
Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Watershed Concepts, 2005	Watershed Concepts	FEMA 1425-DR-TX, Central Texas Disaster Recovery Assistance, July 2002 Flood High Water Mark Survey Report			07/25/2002 Revised – 10/29/2002 & 08/16/2005	



FLOOD PROFILES

CIBOLO CREEK

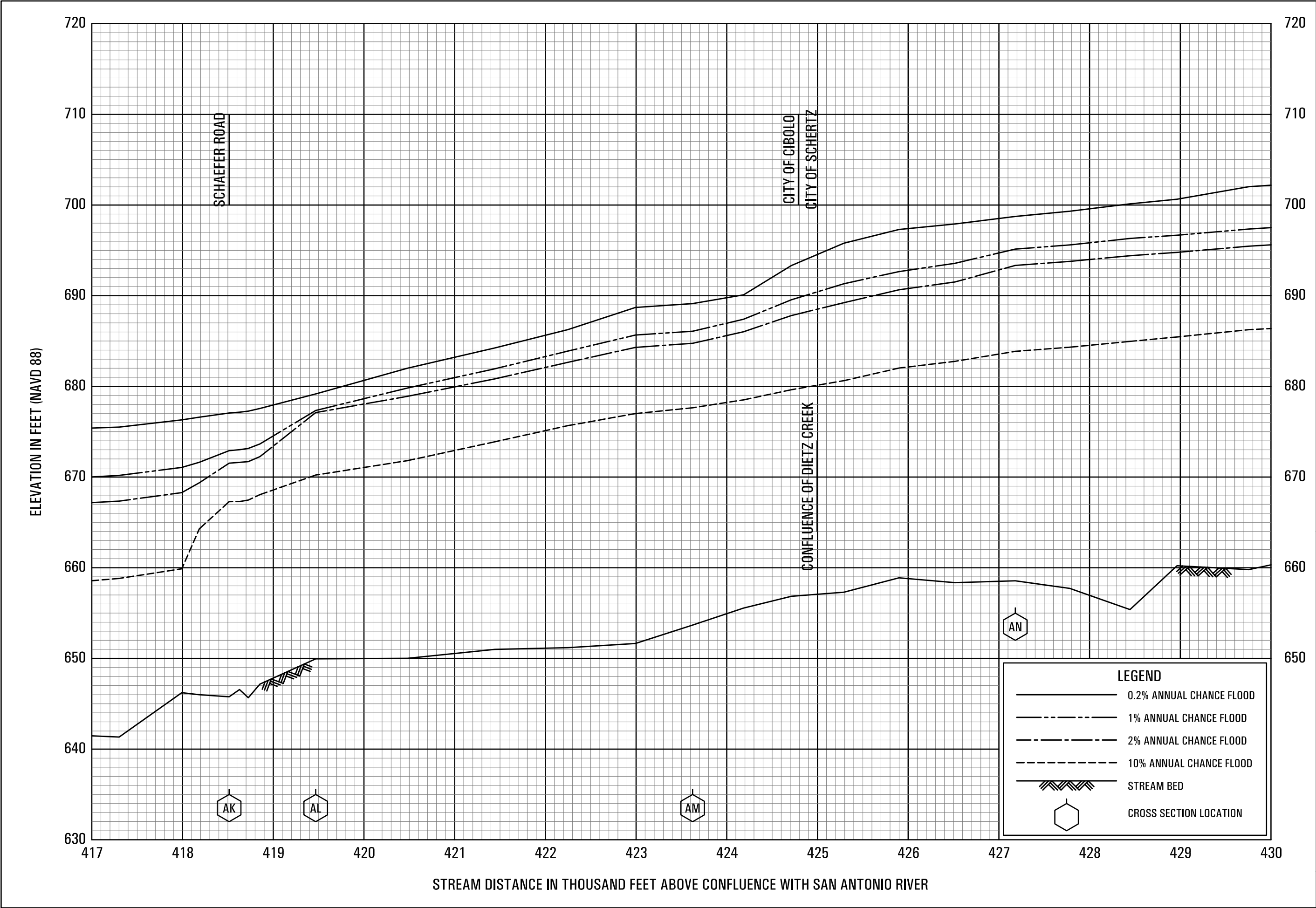
**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**

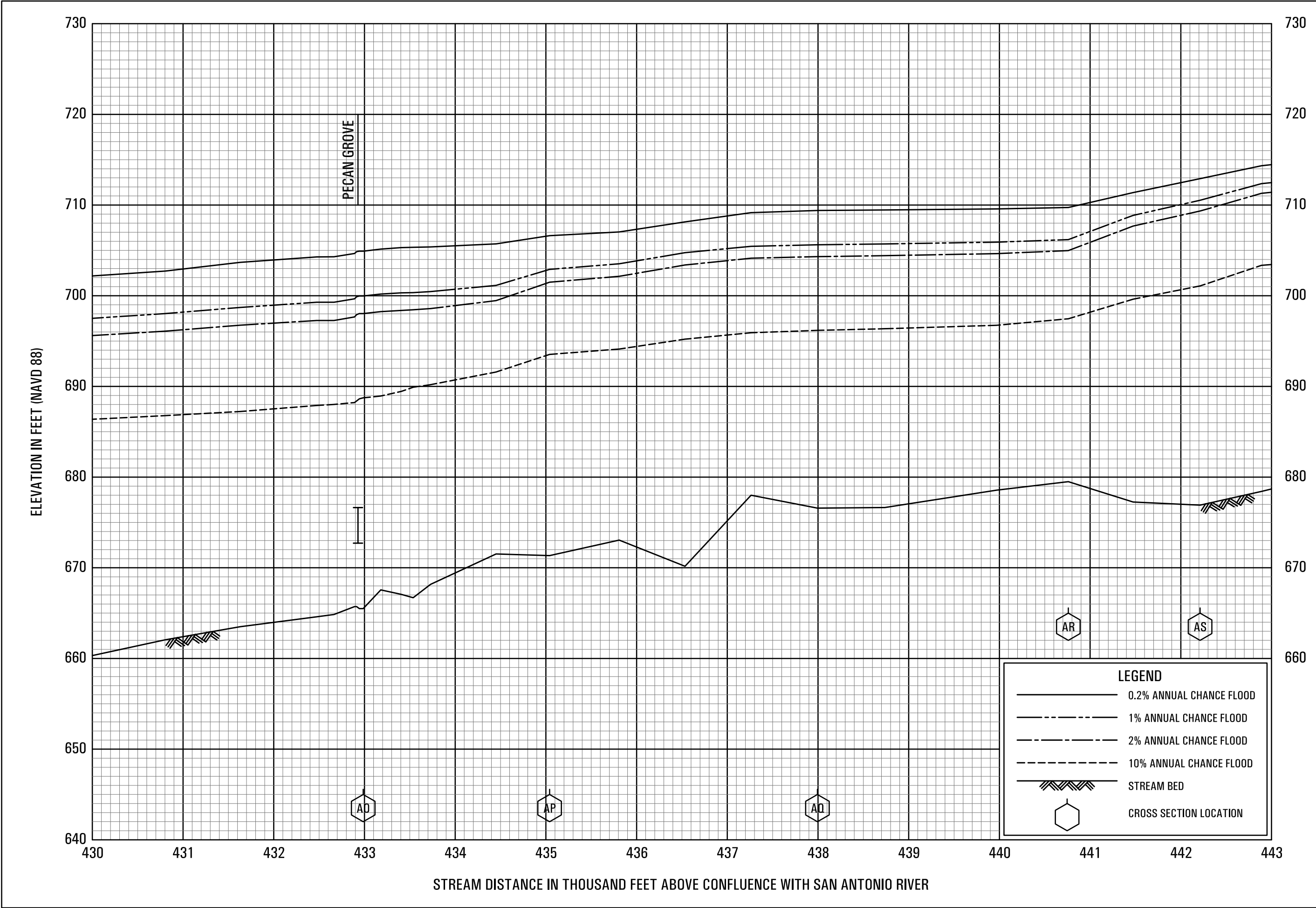


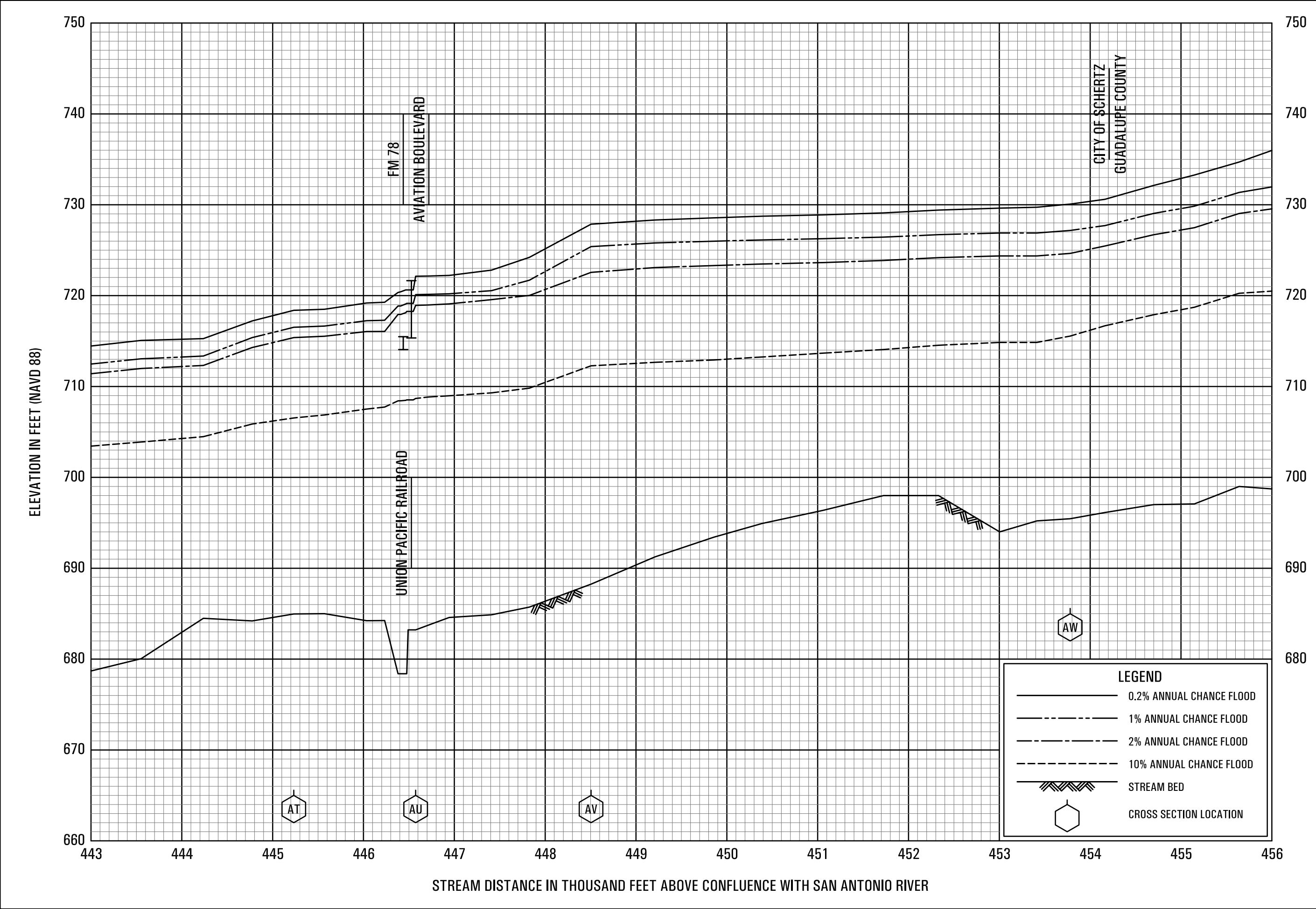
FLOOD PROFILES

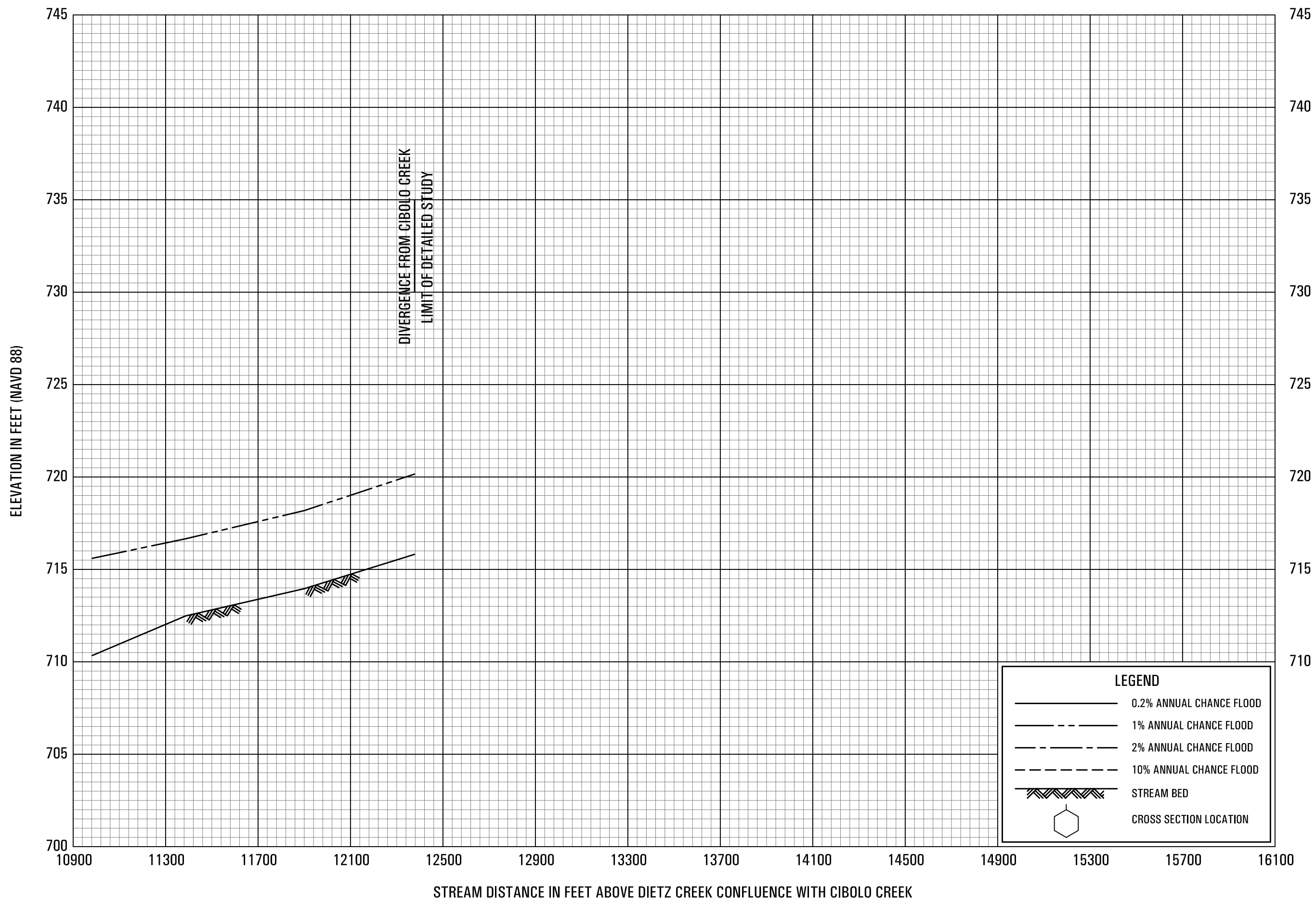
CIBOLO CREEK

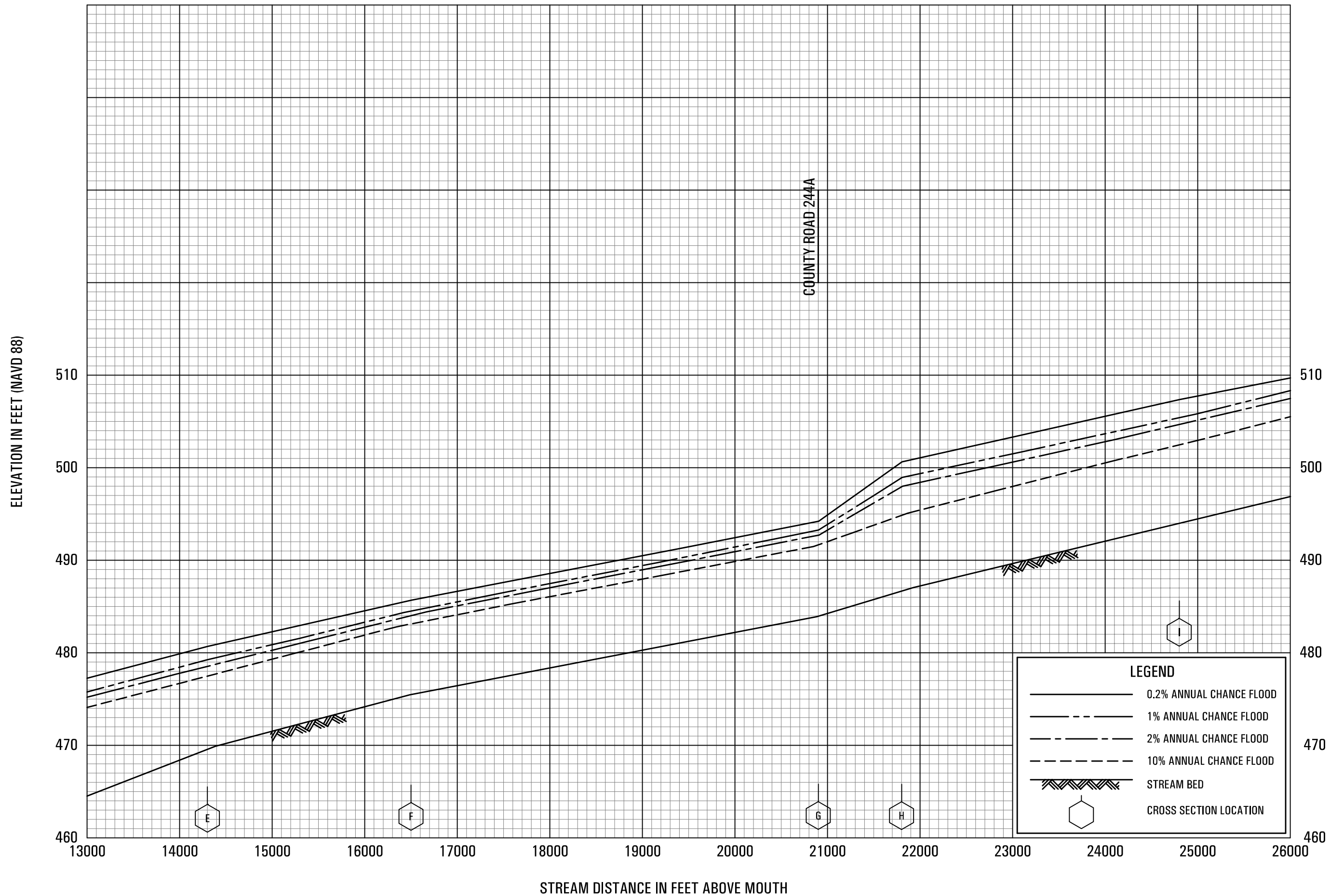
**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**







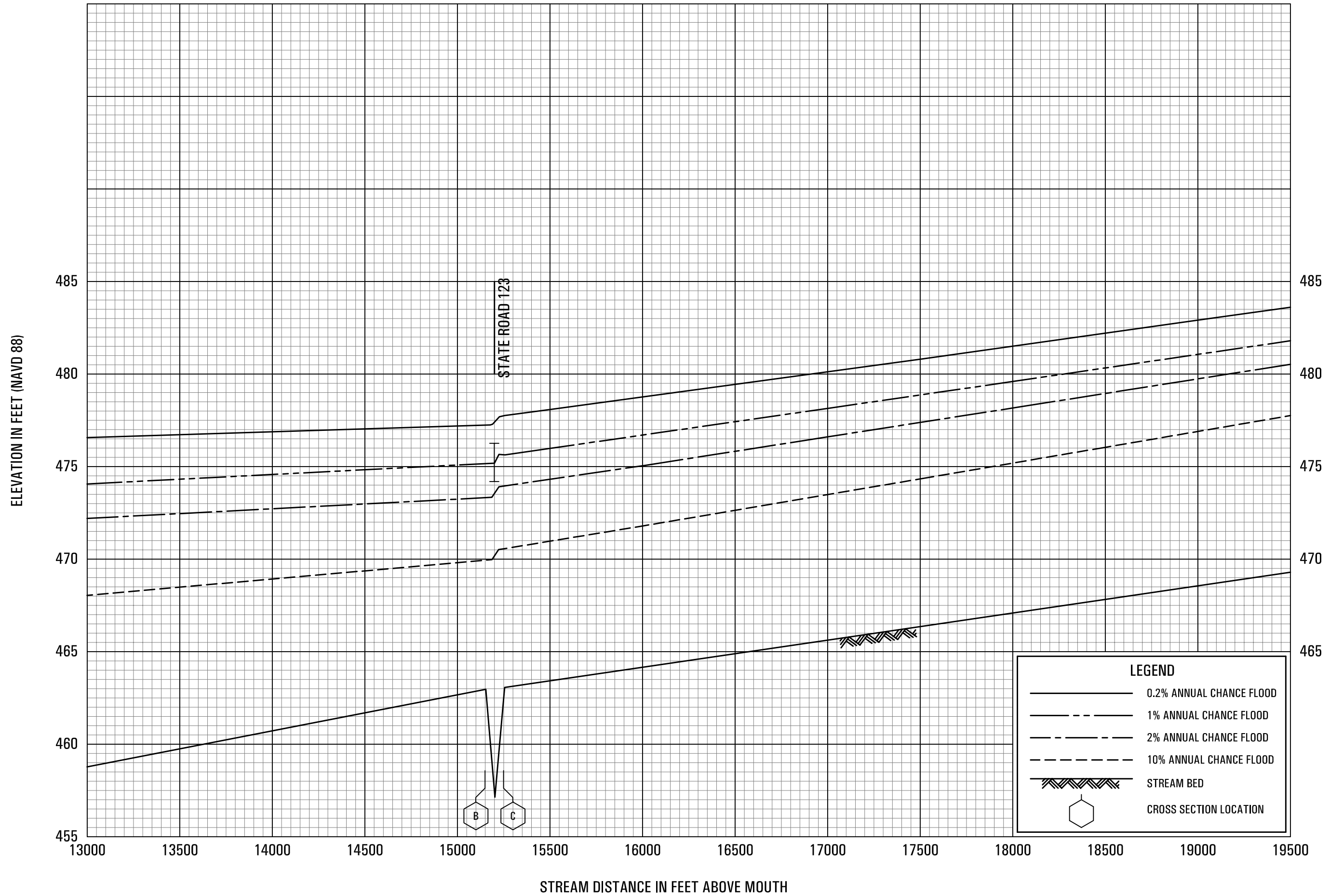


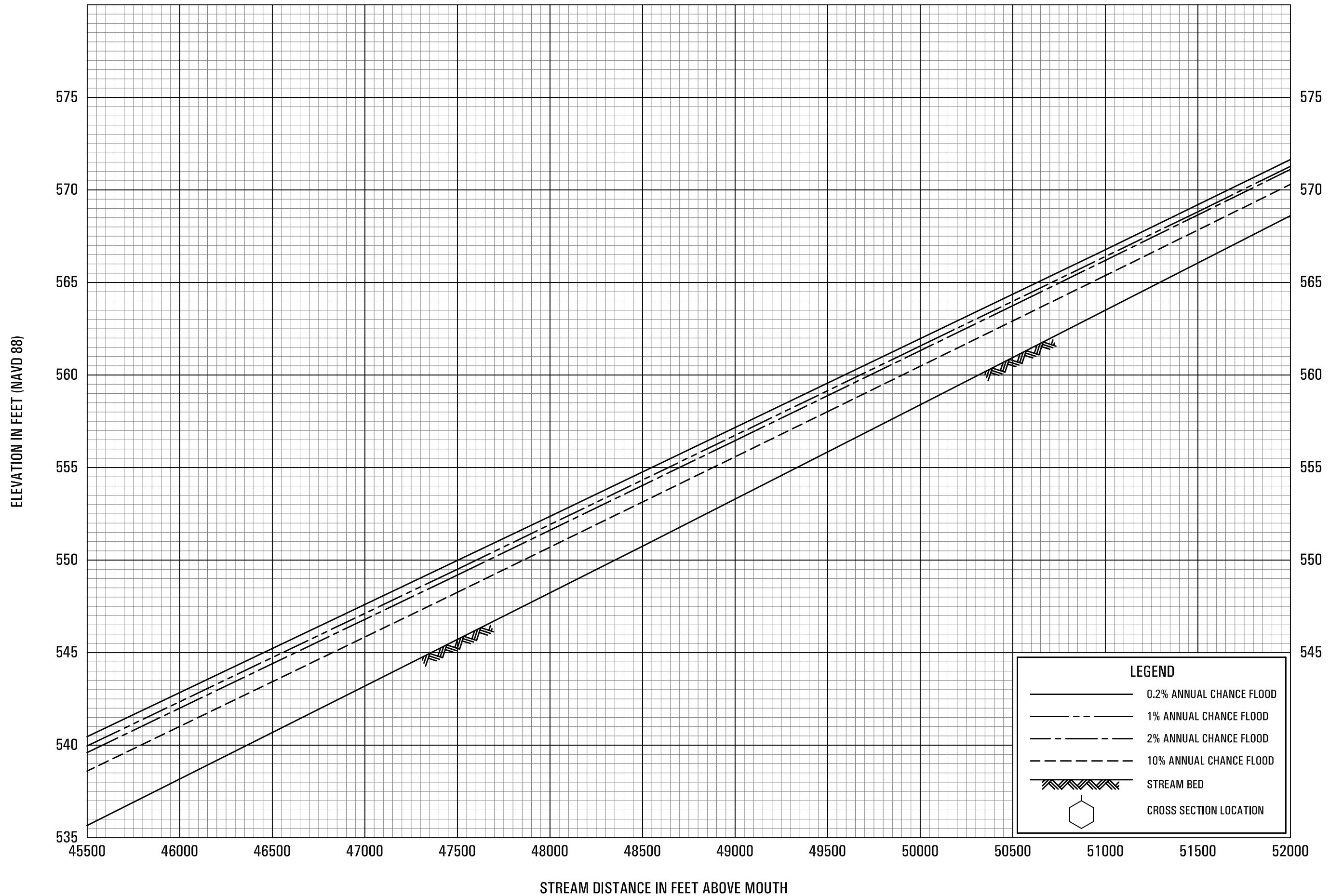


FLOOD PROFILES

COTTONWOOD CREEK NORTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**



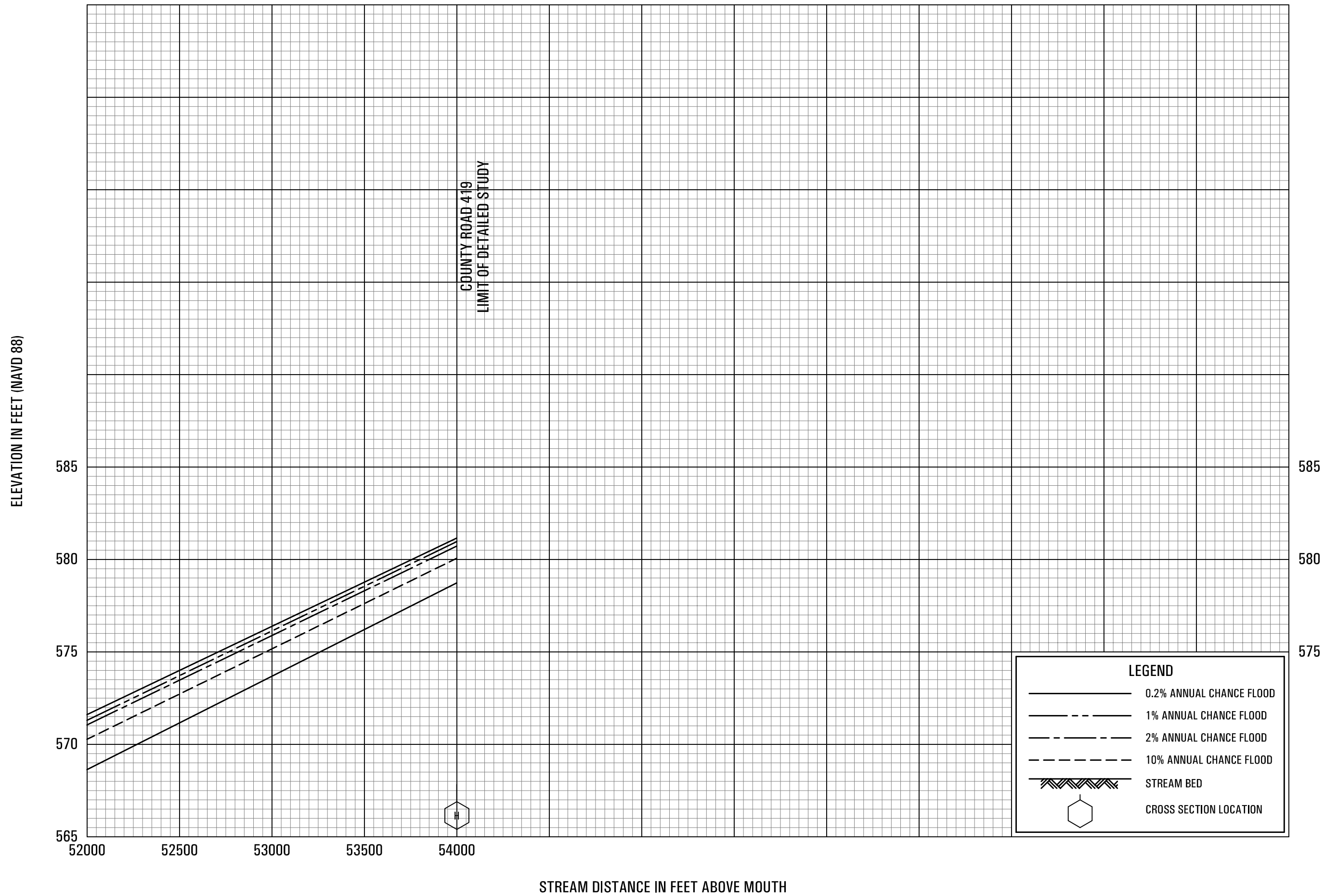


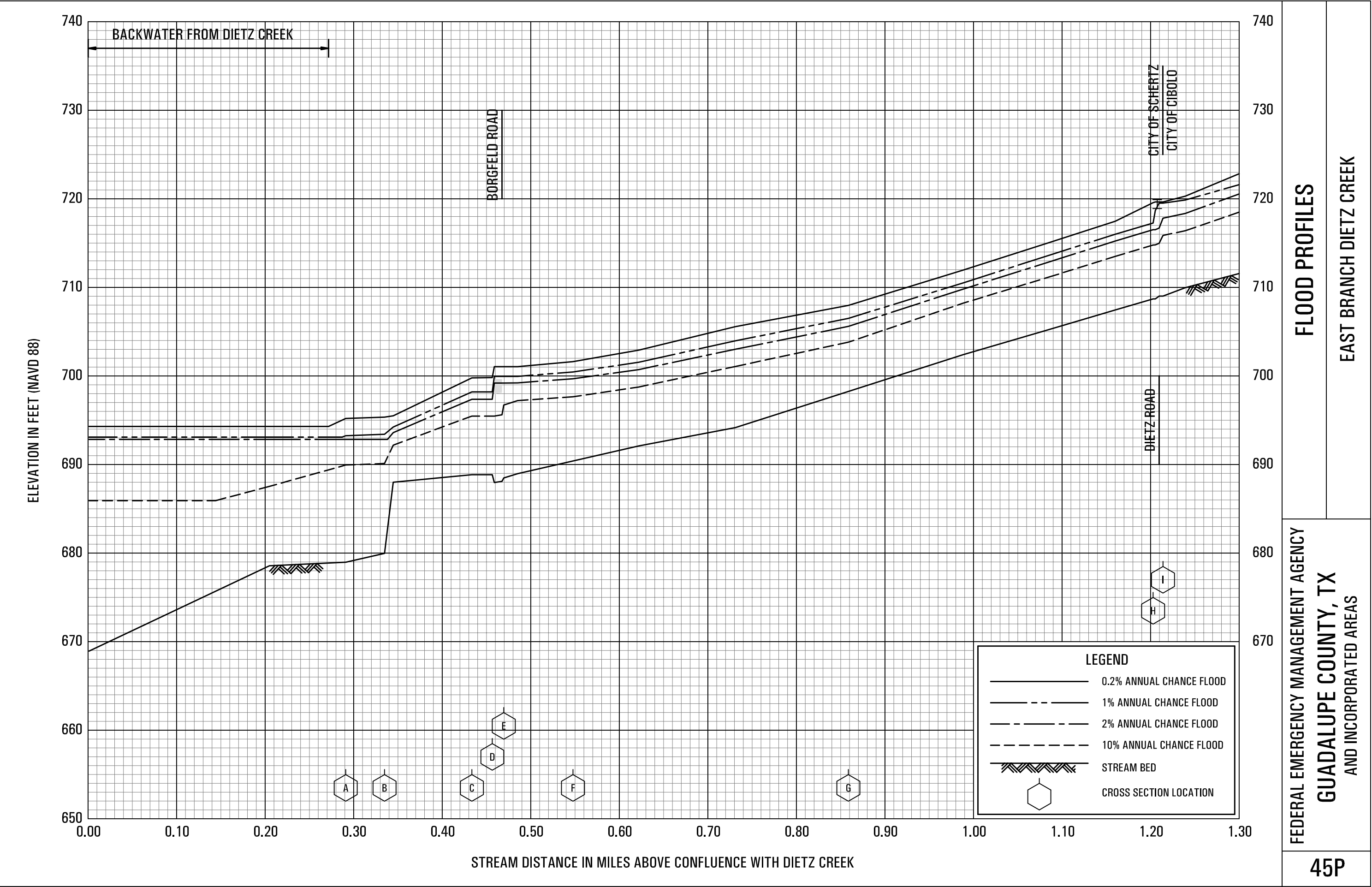
FLOOD PROFILES

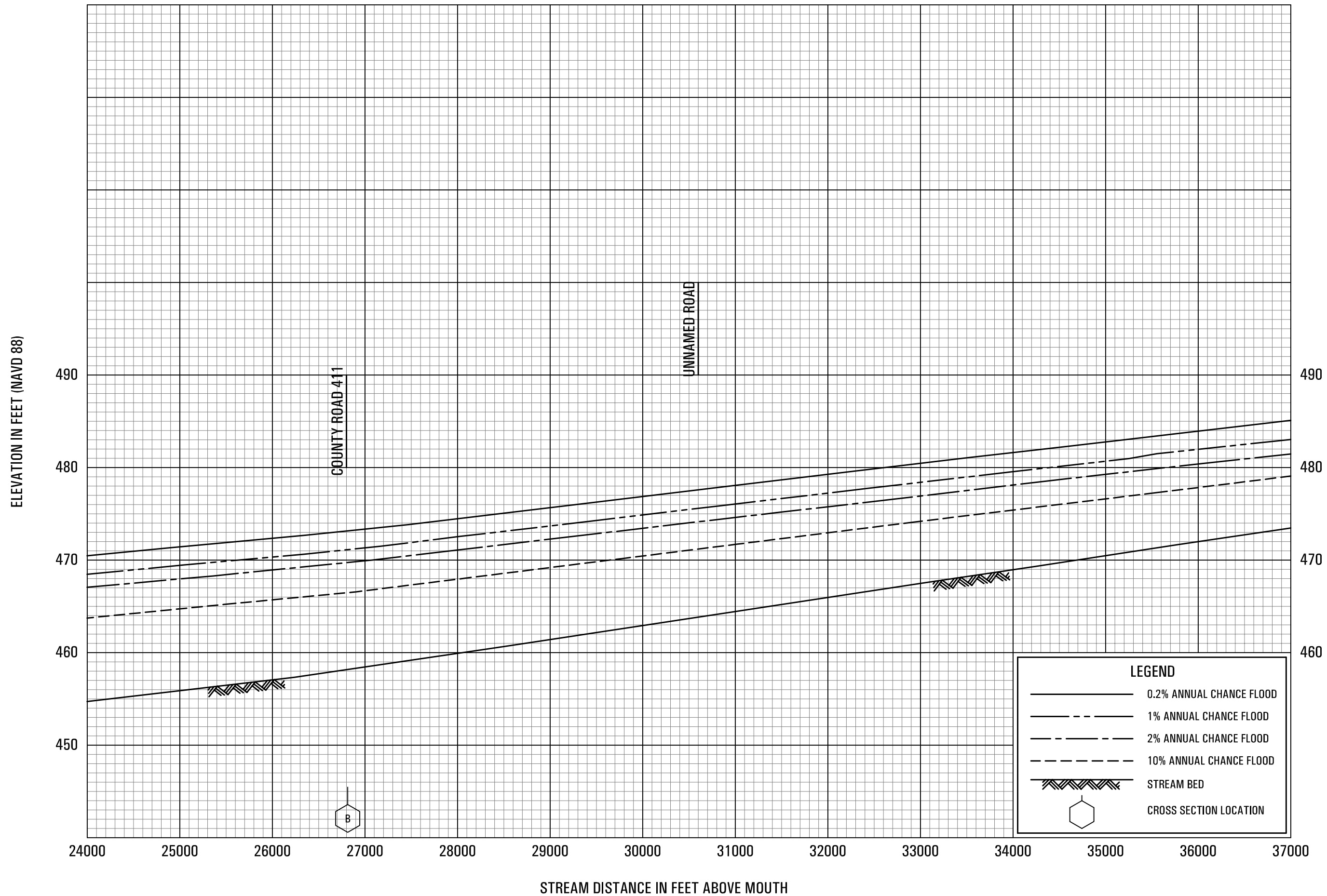
COTTONWOOD CREEK SOUTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**

38P





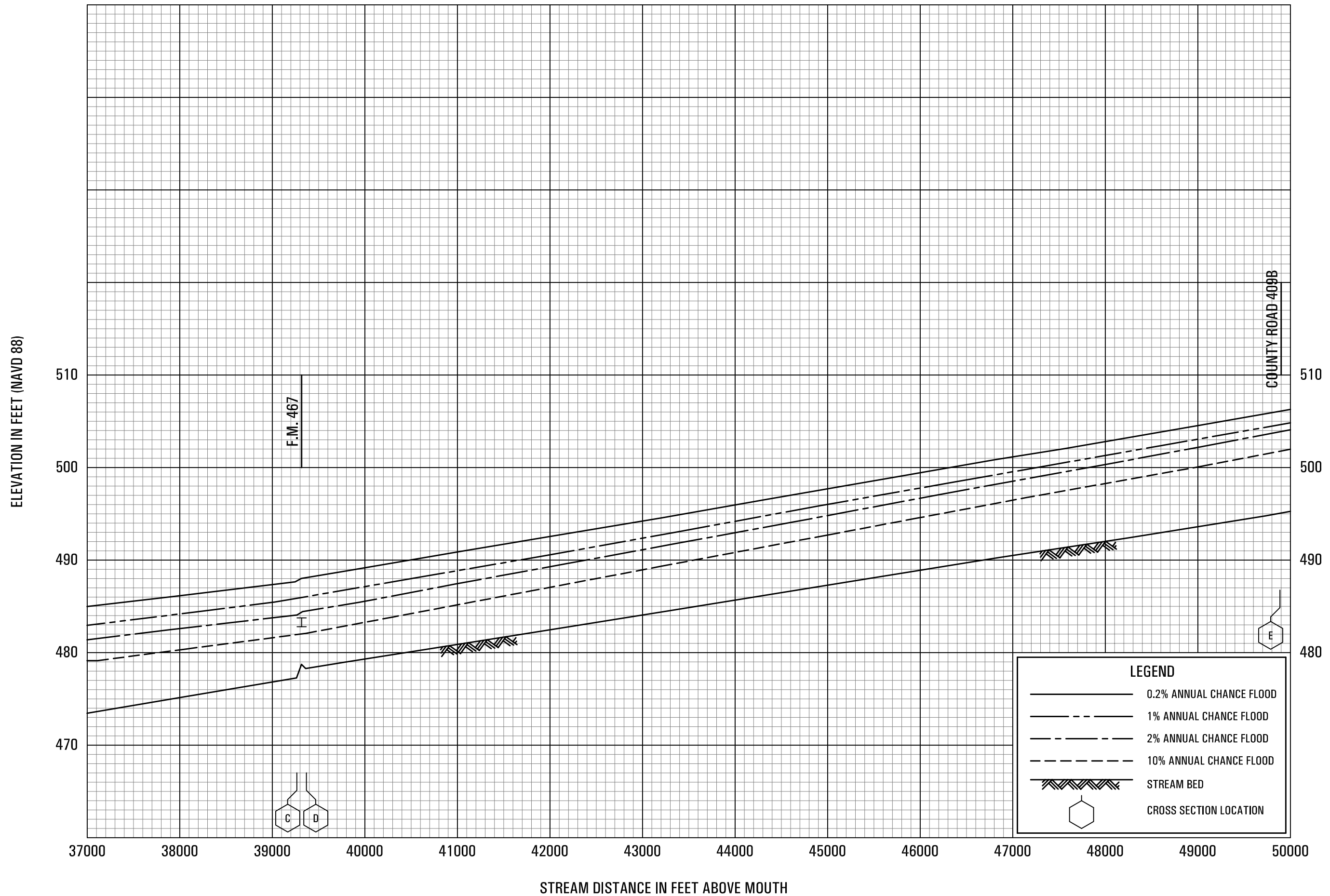


FLOOD PROFILES

ELM CREEK SOUTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**

52P

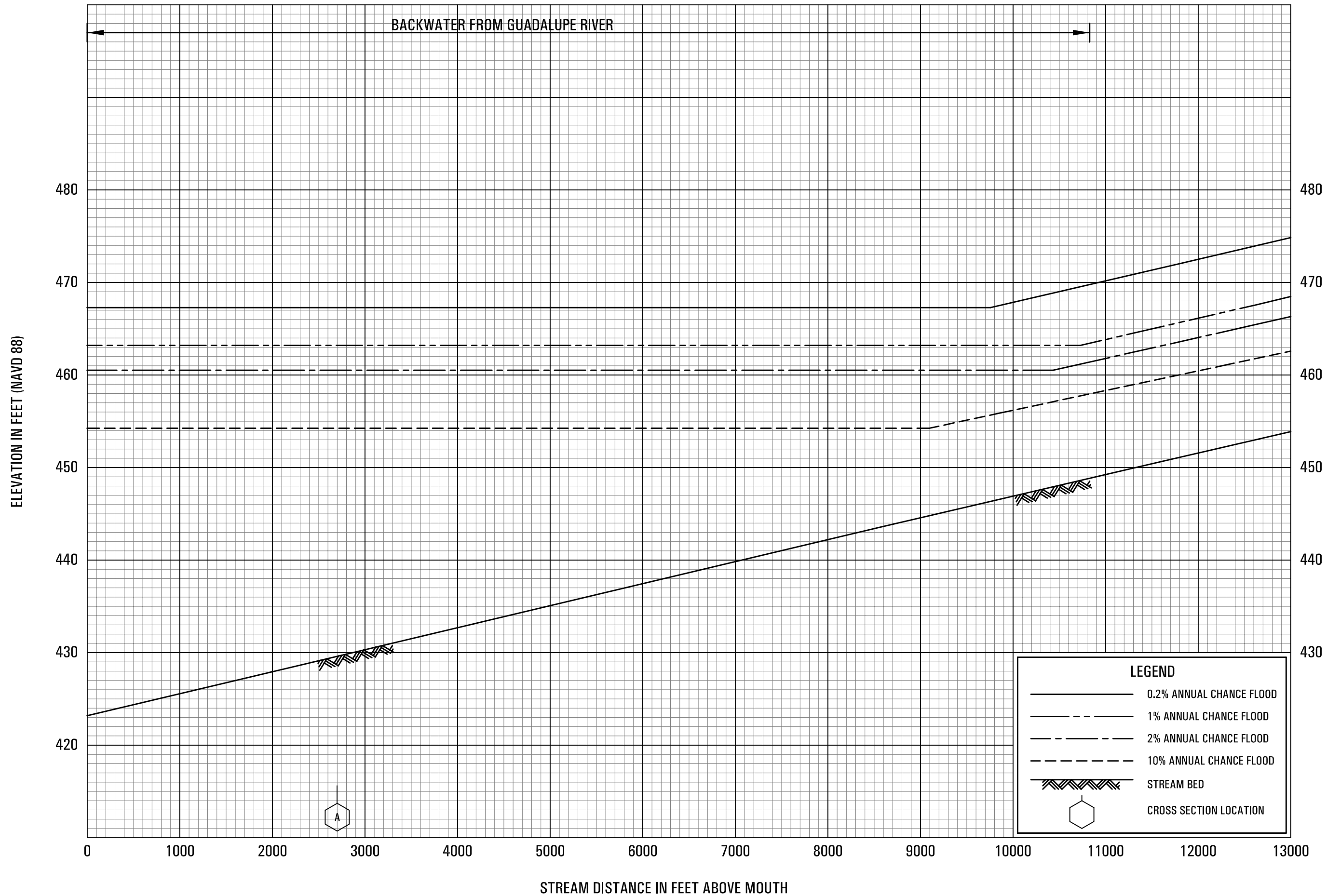


FLOOD PROFILES

ELM CREEK SOUTH

**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**

53P

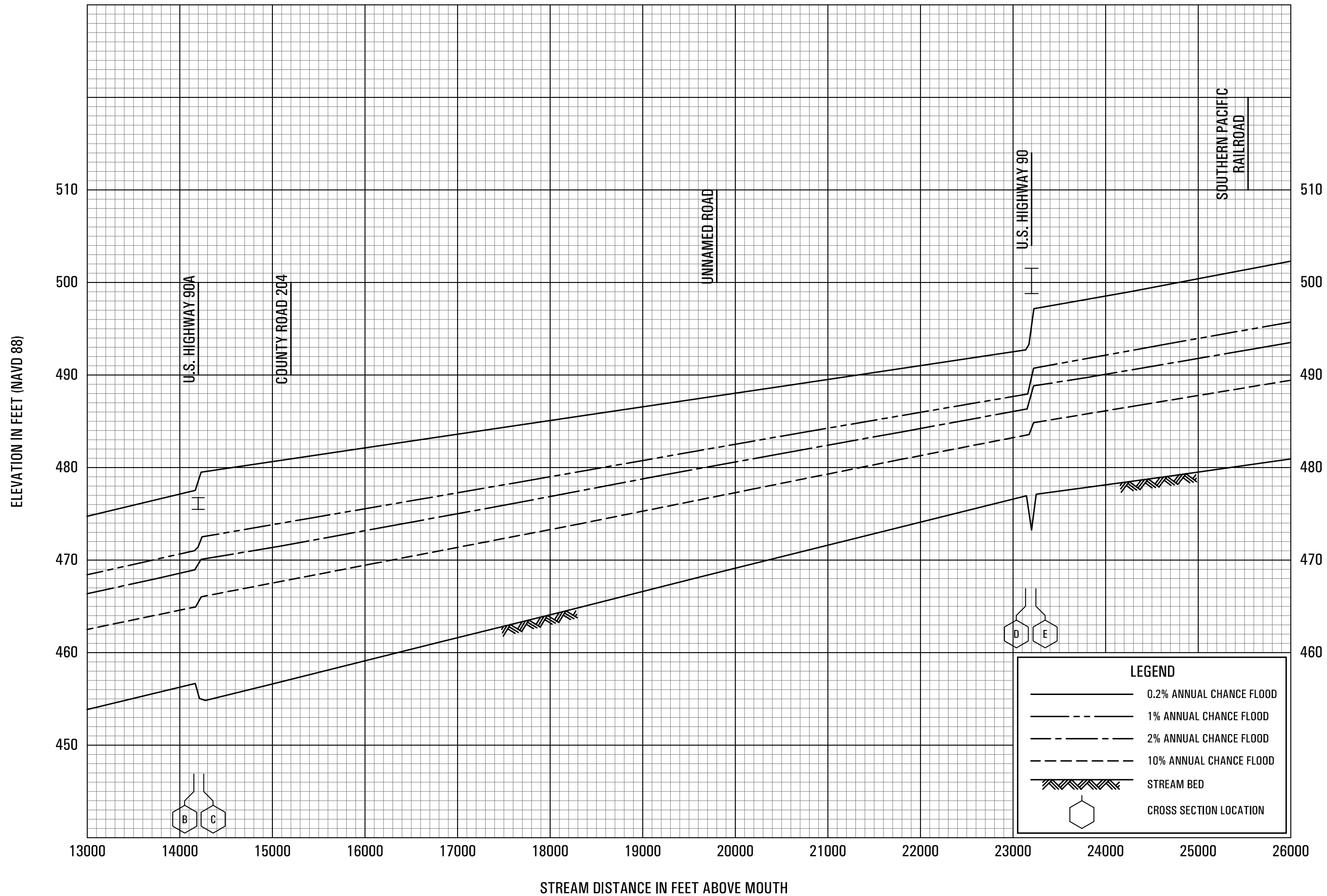


FLOOD PROFILES

GERONIMO CREEK

**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**

55P

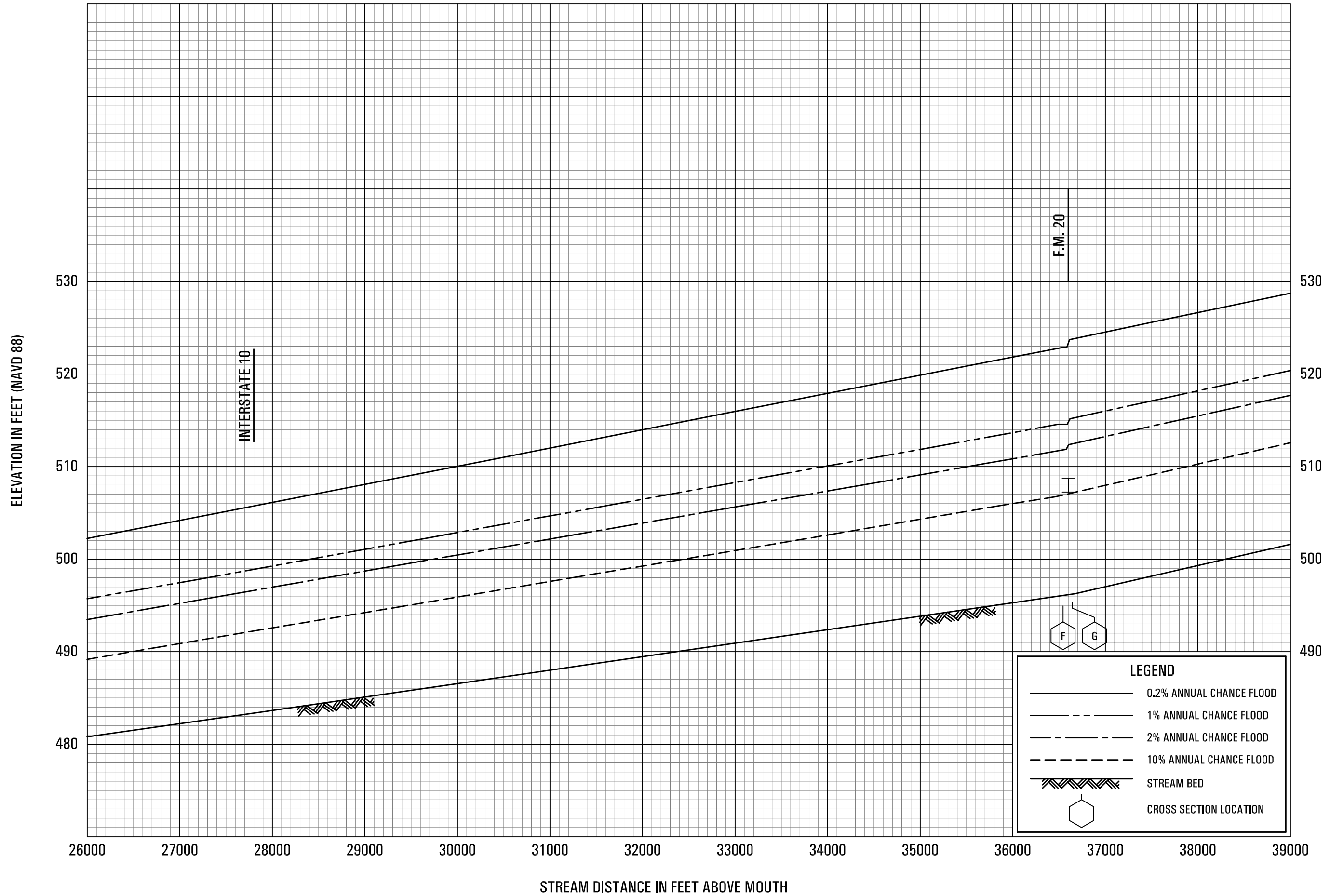


FLOOD PROFILES

GERONIMO CREEK

**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**

56P

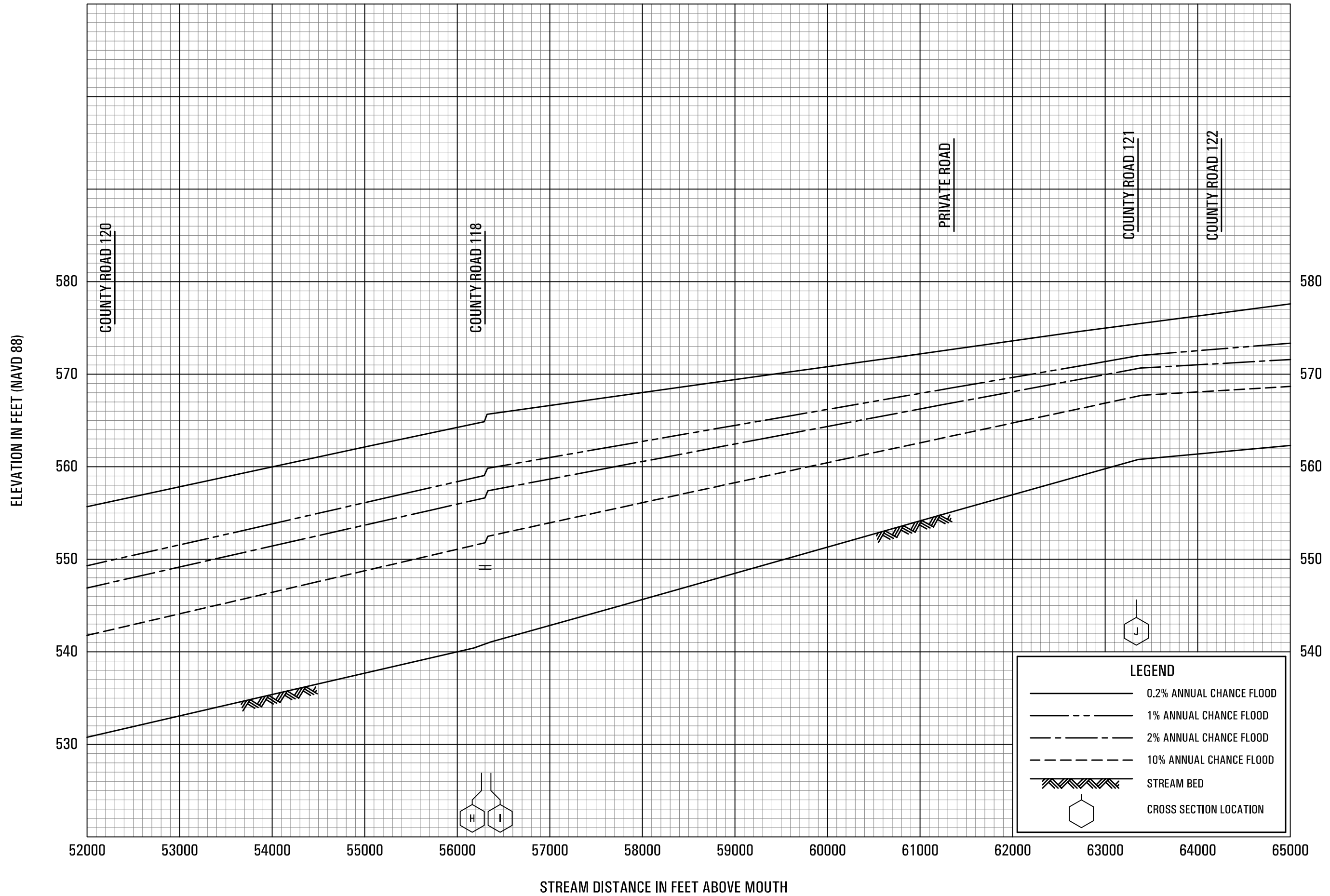


FLOOD PROFILES

GERONIMO CREEK

**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**

57P



FLOOD PROFILES

GERONIMO CREEK

**FEDERAL EMERGENCY MANAGEMENT AGENCY
GUADALUPE COUNTY, TX
AND INCORPORATED AREAS**

59P

